DESCRIPTION

METHOD FOR OBTAINING STATUS, PRINTER DRIVER AND

INFORMATION PROCESSING DEVICE

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TECHNICAL FIELD

The present invention relates to a method for

obtaining status, a printer driver and an information

processing device, and more specifically, a method for

10 obtaining a status which is efficiently applied to a case

where a plurality of computers share a printer, a printer

driver and an information processing device.

BACKGROUND ART

15 Presently, as a system for sharing one or more

printers by a plurality of computers connected to a network,

it is normal to use either a configuration where a print

server is provided for an exclusive use or a configuration

where a sharing system is embedded in the operating system of

20 the computer.

In the former configuration of the print server,

the computers connected to the network become clients. The

clients perform a two-way communication with a print server so

as to make reference to status information of printers,

25 retained in the print server.

In such a configuration, for example, as described in Patent Document 1, the print server includes the following means:

status information monitoring means wherein the print server

5 monitors a configuration and an operating state of the printers, and obtains the status information of the configuration and the operating state of the printers;

status information outputting means wherein the print server selects a computer to be notified of the status information

10 and outputs the information to the computer with reference to a database storing the status information and information on the computer to be notified, and to a database for storing the status information;

status information showing means wherein the print server

15 obtains the status information from the database storing the status information and shows the information; and

server communication means wherein the print server transmits the status information to the clients via the network communication line.

20 The clients include the following means:

client communication means wherein the client receives status information from a print server via a network communication line;

a database storing the status information obtained by the

25 client communication means; and

status information showing means wherein the client obtains

the status information from the database for storing the

status information and shows the information so that the

client also can obtain the status information of the printer.

5   [Patent Document 1] JPA Publication No.11-39110

Further, a configuration wherein one of a plurality

of computers connected to a printer is a server, and the rest

of the computers are clients, as described in Patent Document

2, includes the following steps of:

10   obtaining a printer status; and

writing the status obtained in the previous step in a common

storage area of the server computer, which can be referred to

by the client computer. The client computers make reference

to the status information written in the common storage area

15   of the server computer.

[Patent Document 2] JPA Publication No.2001-75754

Moreover, as for another system regarding

communications between the server and the client, as described

in Patent Document 3, a communication system in which a server

20   and a client perform communications using a communication line

includes the following means: communication status controlling

means provided in the server, in which a communication request

signal is sent to the client via a first communication line

used as a two-way communication line enabling data

25   communication between the server and the client by a request

made by the server or the client so as to enable communication with the client via the communication line; and communication status controlling means provided in the client, in which the client enables communication with the server via the first

5 communication line when the client receives a communication request signal from the server via the first communication line, and the client cancels the state, and then, the client makes a call to a predetermined repeating installation via a second communication line used as a one-way communication line

10 enabling data communication with the server by a request which the client itself makes so as to enable communication with the server again via the communication line, the repeating installation, and a third communication line used as a one-way communication line.

15 [Patent Document 3] JPA Publication No.2004-215233

Furthermore, as described in Patent Document 4, a printer sharing network system in which a plurality of networks are connected, the networks including a plurality of work stations on which different kinds of network operating

20 system are respectively mounted, and a printer to be shared and used by the respective work stations, includes a printer status management device managing a status of the printer of each network which is different according to the respective operating systems.

25 [Patent Document 4] JPA Publication No.8-221234

However, as described in the above Patent Document 1, in the configuration in which a print server for exclusive use is used to share one or more printers by a plurality of computers connected to the network, a configuration in which a

5 client computer makes reference to status information is simple. However, a print server for exclusive use costs a lot, and flexibility of the configuration is reduced.

Moreover, as described above Patent Document 2, in the configuration in which one of a plurality of computers is

10 used as a server, and other computers are used as clients, when the clients make reference to status information stored in the common area of the server, the configuration becomes intricate. In addition to this, it is a problem that the configuration cannot deal with a case where an operating

15 system (hereinafter, referred to as OS) of the client denies two-way communication.

According to a fact that the inventor confirmed, in the configuration in which a computer mounting an operating system which as presently operating is used as a client, and a

20 computer mounting the same or another operating system is used as a server, even if the client tries to obtain status information of a printer connected to the server, the client cannot obtain the status information of the printer since two-way communication is denied.

25 The invention as described in Patent Documents 3

and 4, does not suggest a solution of the problem in which the configuration cannot deal with the case where the OS of the client denies two-way communication.

5   DISCLOSURE OF THE INVENTION

The present invention is being made in consideration of the above described problems, and it is a general object of the present invention to provide a method for obtaining a status of a printer by a simple configuration, 10   a printer driver, and an information processing device.

To eliminate the above described problems, the present invention provides a method for obtaining a status, in which a server computer and a client computer connected to a network share a printer connected to the server computer, and 15   the client computer enables two-way communication and obtains status information of the printer via the server computer without depending on an operating system.

A printer driver regarding the present invention is provided which is applicable to a system in which a server 20   computer and a client computer connected to a network share a printer connected to the server computer, includes means to obtain status information of the printer by performing two-way communication with the server computer without depending on an operating system of the client computer.

25   It is preferable that the printer driver further

include means to perform two-way communication by using a language monitor of the server computer as a server, and means to cause the two-way communication means to perform the two-way communication without depending on an operating system.

5   An information processing device regarding the present invention, which is applicable to a system in which a server computer and a client computer connected to a network share a printer connected to the server computer, includes means to obtain status information of the printer by

10   performing two-way communication with the server computer without depending on an operating system of the information processing device.

           It is preferable that the information processing device further include means to perform two-way communication

15   by using a language monitor of the server computer as a server, and means to cause the two-way communication means to perform the two-way communication without depending on an operating system of the information processing device.

           The status information to be obtained by the method

20   for obtaining status, by the printer driver and by the information processing device, is at least one of option information indicating whether a mountable option is mounted on the printer or not, version information regarding a version of the printer, and status displaying information regarding a

25   status of the printer.

According to the method for obtaining the status, the printer driver, and the information processing device regarding the present invention, when a server computer and a client computer share a printer via a network, the client

5   computer obtains status information of the printer by performing two-way communication with the server computer without depending on the operating system of the client computer. Accordingly, with a simple configuration, the client computer can obtain the status information of the

10   printer, even if two-way communication is denied by the operating system.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig.1 is a diagram showing an embodiment of the

15. present invention;

Fig.2 is a block diagram functionally showing a part regarding a print operation according to the present embodiment;

Fig.3 is a diagram showing an example of a printer

20   which includes an ink jet recording device mounting an option;

Fig.4 is an explanatory diagram showing an example in which status information of a printer cannot be obtained because of a difference of OS between a server PC and a client PC;

25   Fig.5 is a flowchart showing an example of a two-

way communication flag setting operation by a printer driver;

Fig.6 is a flowchart showing an example of a two-way communication executing operation by the printer driver; and

5   Fig.7 is an explanatory diagram showing an example in which status information of the printer can be obtained regardless of the difference of OS between the server PC and the client PC.

10   BEST MODE FOR CARRYING OUT THE INVENTION

A description is given of an embodiment of the present invention with reference to accompanying drawings. Fig.1 is a diagram showing an embodiment of the present invention.

15   The system includes a server computer 1 (hereinafter, referred to as Server PC 1), a plurality of client computers 2 (hereinafter, referred to as Client PC 2), a network 3 connecting Server PC 1 and Client PC 2, and a printer 4 connected to Server PC 1. Server PC 1 and Client PC

20   2 share the printer 4 by a sharing function of the OS.

Next, with reference to Fig.2, a description is given of a printer driver which is associated with the Server PC 1 and the Client PC 2.

First, the printer 4 includes a host interface 41

25   exchanging the data and the status information with a host

computer i.e. Server PC 1, a main controller 42 which prints

out the print data by running and controlling a printer engine

43 based on the print data received from Server PC 1 and

controls Server PC 1 for outputting the print data via the

5   host interface 41, and the printer engine 43.

The status information of the printer 4 includes

option information, version information of the hardware, and

status showing information. The option information includes

information regarding whether a perfecting unit is mounted and

10 information regarding whether an expansion supply cassette (or

supply tray) is mounted. The status showing information

includes information showing printing state, information

showing running out of ink, and information showing running

out of paper.

15   Moreover, a printer driver 10 of Server PC 1

includes a spooler 11 generating print data from the data

produced by application software wherein the drawing is

omitted, a language monitor 12 carrying out processing such as

converting the print data received from the spooler 11 into a

20 language for the printer 4, and a port monitor 13 outputting

the data from the language monitor 12 to an actual port and

reporting the status information obtained from the printer 4

to the language monitor 12. It should be noted that the

printer driver of this Server PC 1 is composed of software

25 including a printer driver in the narrow sense (hereinafter,

referred to as Driver in the present description) wherein a

drawing is omitted, a spooler, a language monitor, and a port

monitor.

A printer driver 20 of Client PC 2 includes a two-

5   way communication module 21 performing two-way communication

with the language monitor 12 of Server PC 1, a spooler 22

generating print data from the data produced by application

software where a drawing is omitted, a driver 23 making the

two-way communication module 21 perform two-way communication

10   and transmitting the data produced by application software

where a drawing is omitted, and a status display utility 24

displaying the status information of the printer 4 received by

the two-way communication module 21. The printer driver of

Client PC 2 includes the two-way communication module 21, the

15   spooler 22, the driver 23, and the status display utility 24.

Here, the two-way communication module 21 of Client

PC 2 regards the language monitor 12 of Server PC 1 as a

server for the remote procedure call (RPC). The two-way

communication module 21 performs two-way communication by

20   making an inquiry using RPC so as to obtain the status

information received by the language monitor 12 of Server PC 1

from the port monitor 13.

It should be noted that the printer driver 10 of

Server PC 1 and the printer driver 20 of the Client PC 2 are

25   shown in the different diagrams to explain the respective

functions of the server and the client, but the configurations of the printer drivers are actually the same.

Next, with reference to Fig.3, a brief description is given of an example of a printer where a perfecting unit
5   and an expansion tray can be used as an option.

The printer includes a main body 401, a picture forming part 402 in the main body 401, a plurality of recording media 403 (hereinafter, referred to as Paper 403) beneath the main body 401, and a paper supplying cassette 404
10 whereon Paper 403 can be mounted. The paper 403 is supplied by a transport mechanism 405 to the picture forming part 402. The picture forming part 402 prints out the required picture on Paper 403 while Paper 403 is carried by the transport mechanism 405. Then, Paper 403 is delivered to a delivery
15 tray 406 mounted on the lateral side of the main body 401.

Moreover, a detachable perfecting unit 407 can be mounted on the main body 401 as an option. To perform a perfecting printing, after one side (face) of Paper 403 is printed, Paper 403 is carried by the transport mechanism 405
20 in the reverse direction into the perfecting unit 407. Then, Paper 403 is turned over and carried to the transport mechanism 405 again so that the other side (backside) can be printed. After the other side (backside) is printed, then Paper 403 is delivered to the delivery tray 406.

25   Furthermore, a detachable expansion cassette 408

can be set under the paper supplying cassette 404, and thereby, Paper 403 can be supplied from the expansion cassette 408.

Here, the picture forming part 402 includes guide shafts 411, 412, and a carriage 413 which can be moved by

5   sliding. The carriage 413 is moved (main scanning) by a main scanning motor in a direction perpendicular to the direction in which Paper 403 is delivered. The carriage 413 includes a recording head 414 which is a droplet discharging head where a plurality of nozzle holes is arranged to work as exhaust slots

10 for discharging droplets. Further, the carriage 413 includes a detachable ink cartridge supplying the liquid to the recording head 414.

Further, the paper supplying cassette 404 and the expansion cassette 408 separate a piece of paper from Paper

15 403 and supplying the paper one by one to the main body 401 by paper supply roller (a half moon roller) 421 and by a separating pad where a drawing is omitted. Then, Paper 403 is carried to the transport mechanism 405.

The transport mechanism 405 includes a guide for

20 guiding Paper 403 to the upper side, a transport guide part 423 guiding Paper 403 sent from the perfecting unit 407, a transporting roller 424 transporting Paper 403, a guide member 426 guiding Paper 403 to the transporting roller 424, a pressure roller 425 pressing Paper 403 on the transporting

25 roller 424, and another guide member 427 guiding Paper 403

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returned when performing a perfecting printing with the

perfecting unit 407 and another pressure roller 428 pressing

Paper 403 so as to transport Paper 403 from the paper

transporting roller 424.

5   Moreover, the transport mechanism 405 includes a

transport belt 433 stretched around a driving roller 431 and a

subordinate roller 432, an electrification roller 434

electrifying the transport belt 433, and a guide roller 435

opposing the electrification roller 434 so as to transport

10   Paper 403 by the recording head 414 keeping Paper 403 flat.

Furthermore, in the downstream of the transport

mechanism 405, a delivery roller 438 is provided for

delivering Paper 403 whereon a picture is printed to the

delivery tray 406.

15   Accordingly, in the above described printer, the

perfecting unit 407 and the expansion cassette 408 are used as

an option, the computers (Server PC 1 and Client PC 2) using

the printer on the host side obtain information regarding

whether such an option is mounted so as to instruct the

20   perfecting print and to select a supplying means and a size of

the paper to be supplied.

Since Server PC 1 is connected to the printer 4,

the status information of the printer 4 including the option

information can be obtained by the port monitor 13 of the

25   printer driver 10.   Therefore, information regarding whether

the perfecting is in the print property and information on selecting the paper supplying cassette to be used can be displayed.

In a case where Client PC 2 has no printer driver according to the present invention, two-way communication with Server PC 1 depends on the OS of Client PC 2. As a result, the two-way communication is denied by the OS of Client PC 2, and thereby, Client PC 2, for example as shown in Fig.4, may fail to obtain the option information, the version information, and the status displaying information (✗ as shown in Fig.4). It should be noted that OS-1, OS-2 and OS-3 shown in Fig.4 are respectively different OSs.

On the contrary, in Client PC 2 having a printer driver 20 according to the present invention, the printer driver 20 does not depend on the OS of Client PC 2, and accordingly, the status information can be obtained from Server PC 1 by enabling two-way communication regardless of the OS of Client PC 2.

A description is given of the process with reference to Figs. 5 and 6.

First, according to the present embodiment, a two-way communication flag setting operation is performed as shown in Fig.5 so that a user can set ON/OFF the two-way communication operation. Accordingly, the user opens a UI (user interface) of the printer driver (S52), then clicks an

"OK" button so as to close the UI (S54) after setting two-way

communication in the UI of the printer driver (S53). Thus,

the printer driver stores a value of the two-way communication

setting in the two-way communication flag of a registry (S55)

5   (for example, DEVMODE).

When the setting screen (the print property) of the

printer driver 20 is opened by the instruction of printing

from the application software, a two-way communication

executing operation shown in Fig.6 is started. Then, the two-

10   way communication flag which is set by the user is obtained

from the registry (S62) (for example, DEVMODE), and it is

determined whether the two-way communication flag is in a

state of "The two-way communication is enabled" (S63). If it

is determined that "The two-way communication is enabled",

15   printer information (bit configuration) set by the OS is

obtained from the registry (S64).

After the printer information is obtained, it is

determined whether the two-way communication flag of the

printer information is ON (S65). If the two-way communication

20   flag is ON, the two-way communication is executed (S67). If

the two-way communication flag is not ON, it is determined

whether a network connection flag of the printer information

is ON (S66). If the network connection flag is ON, the two-

way communication is executed.

25   It should be noted that the status display utility

24 is run by starting a printout, and hereafter, the status

display utility 24 performs a two-way communication so as to

obtain the status information of the printer 4.

Accordingly, in a case where a two-way

5   communication with Server PC 1 is denied by the OS of Client

PC 2, for example as shown in Fig.7, Client PC 2 can obtain

the option information, the version information, and the

status displaying information of the printer 4.

Therefore, the printer diver is applicable to a

10   system in which a server computer is connected to a client

computer via a network, and the server computer and the client

computer can share a printer connected to the server computer.

Since the printer driver obtains the status information of the

printer by performing two-way communication with the server

15   computer regardless of the operating system of the client

computer, with a simple configuration, the status information

of the printer connected to the server computer can be

obtained even if the two-way communication is denied on the OS

side.

20   In addition to the printer driver, the information

processing device can obtain the status information of the

printer connected to the server computer by executing a

program realizing the above described function of the printer

driver even if the information processing device is used as a

25   client computer and the two-way communication can not be

performed because of the differences of the OSs of the server computer and the client computer.

It should be noted that the description of the present invention is given with an example of an ink jet recording device, but an electrophotographic printer can also used as the printer of the present invention. Further a complex machine where a printer, a fax machine and a copier are unified can also be applied to the present invention.

The present application is based on Japanese priority application No.2004-259105 filed on September 16, 2004, with the Japanese Patent Office, the entire contents of which are hereby incorporated by reference.